

**REMARKS/ARGUMENTS**

Claims 1-3, 6, 8, 18, 20-25, 27, 31, and 33-44 are pending. Claims 1, 18, 25, and 44 are amended to clearly distinguish the claimed invention over the cited references. Favorable reconsideration of this application is requested in view of the amendments made above and the remarks that follow. No new matter has been introduced by this amendment.

**1. Interview Acknowledgment**

Applicants thank Examiner Ferguson for the courtesies extended to Applicant's representative during February 19, 2010 telephonic interview. During the interview, independent claim 1 was discussed. It was decided that the Applicants amend claim 1 to clearly define that the polymer material impregnated throughout the thickness of the web. In addition, after directing the Examiner's attention to the pages of specification for the support of the phrases "spaced crack-arresting islands that impede crack propagation" and "crack-arresting islands that impede crack propagation and fracturing in said web without adversely affecting the modulus of elasticity and tensile strength", the Examiner appeared to be in agreement with the Applicant's position. The substance of the interview is summarized in the following remarks.

**2. Rejection of Claims 1-3, 6, 8, 18, 20-27, 29 and 31-44 under 35 U.S.C. § 112,  
1<sup>st</sup> paragraph**

Claims 1-3, 6, 8, 18, 20-27, 29 and 31-43 were rejected under 35 USC 112, first paragraph, on the grounds that these claims contain subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the

inventor(s), at the time the application was filed, had possession of the claimed invention. In particular, the rejection states that the phrases “spaced crack-arresting islands that impede crack propagation” and “crack-arresting islands that impede crack propagation and fracturing in said web without adversely affecting the modulus of elasticity and tensile strength” are not supported by the specification. Although the exact phrasing of the language used in the claims may not have appeared in the specification as filed, the structure and function defined by the amended language find clear support. See page 2, lines 1-9, page 3, lines 2-14, page 4, lines 12-37, page 5, lines 16-19, and page 6, lines 14-33. Applicants respectfully request withdrawal of the rejection.

**3. Objection to Specification**

The Examiner is directed to the above paragraph 2 with respect to this objection.

**4. Rejection of Claims 1-3, 6, 18, 20-25, 27, 29, 33-38 and 40-44 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over Gentile (USPN 3,879,257).**

Claims 1-3, 6, 8, 18, 20-27, 29 and 31-44 were rejected under 35 USC 103(a) as unpatentable over Gentile (USPN 3,879,257). In making this rejection the examiner alleged that since Gentile discloses a cellulose papermaking fiber network with a bonding material impregnated in the web on at least one side in discontinuous geometric formations, it would be obvious for the impregnated material to form spaced crack-arresting islands that impede crack propagation in the web to give a uniform surface, as claimed. The Applicants respectfully disagree.

As discussed during the telephonic interview, the purpose of claimed invention is to reinforce the entire thickness of the paper or paperboard to prevent cracks or tears from propagating across the paper. The islands of polymer serve to retard the cracks from advancing by locally raising the fracture toughness of the paper or the board. Increasing the fracture toughness of the paper means that it will take more force for the tear to continue increasing in length. If further crack growth is impeded by the islands then the paper can continue through the paper manufacturing, printing or other end use process without tearing in half. Since neither the tensile strength nor the stretch is changed by the invention, the products can be converted, cut, die cut or slit using the same equipment as conventional paper.

On the other hand, Gentile (USPN 3,879,257) is trying to impart rub resistance by applying a bonding material to strengthen the surface of the sheet without creating bonds that penetrate to the other side. Any bonding in Gentile (USPN 3,879,257) that penetrates reduces the softness, bulk and moisture absorbing capability. In fact Gentile (USPN 3,879,257) discloses in Col. 2, lines 23-38:

*"Attempts to restore the strength lost by reduction of papermaking bonds have included the addition to the web of bonding materials which are capable of adding strength to a greater degree than adding stiffness to the web. One method which has been used to apply bonding materials to the web is to add the bonding material to the aqueous slurry of fibers and deposit it on the web-forming surface along with the fibers. With this method, the bonding material can be distributed evenly throughout the web, avoiding the harshness which would accompany concentrations of bonding material. However, this method has the disadvantage of reducing the absorbency of the web by filling the pores between the fibers with bonding material. It also bonds the web uniformly throughout, the disadvantage of which will be explained subsequently."*

Clearly, Gentile (USPN 3,879,257) teaches away from the claimed invention as recited in the claims 1, 18, 25, and 44.

Moreover, the bonding agent in Gentile (USPN 3,879,257) is applied in a fine, spaced-apart pattern so that the web retains its absorbency – not for any purpose related to crack propagation, and it is submitted that in the structure of Gentile the bonding agent would not function to impede crack propagation. In fact, the particular application of the bonding agent and the creping of the web in Gentile cause internal splitting in scattered areas of the web to form void pockets, thus increase the absorbency of the loose, bulky fibrous structure of Gentile. See column 7, lines 50-65. Moreover, creping of the web in Gentile gives it a roughened or undulating surface to increase the web's bulk and absorbency. See column 5, lines 21-68. The web of Gentile does not have a uniform surface as called for in the claims of the present application.

It should be noted that the difference between claimed invention and Gentile (USPN 3,879,257) is the impact on the basic mechanical properties of the inventions. Gentile claims an increase in the Tensile strength and the Stretch of the paper when subjected to his invention. In Gentile's table 1 it shows significant increases in both properties in both of the primary paper directions. The claimed invention in Table 2, page 6, measured no change in the Tensile strength or the Stretch in either direction.

Regarding claims 37-38, the examiner contended that the phrase "wherein the paper or board is calendered" introduces a process limitation and cannot be given any patentable weight. Applicant submits that this phrase describes a physical attribute of the paper, and is not a process limitation. The term "calendered paper" is recognized in the industry as referring to paper that has been smoothed and compacted between the rolls of a calender and is thus more or less glossy. Although Applicants believe the phrase as previously written describes a physical

attribute and not a process step, the claim has been amended to state that the paper or board comprises calendered paper or board, thereby clearly defining a physical attribute.

Regarding claims 40-42, the examiner contended that Gentile discloses printing the web at column 22, lines 3-6. Applicants submit that the use of the phrase “printed web” by Gentile in column 22, line 3, does not refer to “printing” in the usual sense. What Gentile is referring to is the process of applying the bonding material by passing the web through a nip formed by a patterned gravure roll and an elastomeric roll. See column 21, lines 45-59. While this may, in a very general sense, be “printing”, it is not “print” as contemplated by claims 40-42.

Regarding claim 44, generally the same comments apply as made above in connection with claim 1. Further, the examiner considered the phrase “for subsequent treatment such as coating and printing” to be a statement of intended use and that it did not result in a structural difference between the claimed invention and the prior art. However, this ignores the immediately preceding claim limitation requiring the paper or board to have a substantially uniform flush surface -- which is the structural feature that makes it suitable “for subsequent treatment such as coating and printing”. Gentile does not have this claimed feature.

There is no suggestion in Gentile (USPN 3,879,257) of making a crack resistant paper or board wherein a thin film of polymer is deposited in a discontinuous geometric pattern onto a cellulosic fiber web to produce islands of polymer-impregnated fiber that impede fracturing and crack propagation in the web, and wherein the polymer penetrates into the web so that the surface of the web is substantially uniform, all as claimed herein. Moreover, modifying Gentile (USPN 3,879,257) to produce the presently claimed invention would change the nature of the invention in Gentile (USPN 3,879,257) and would render it unsuitable for its intended purpose.

Appl. No. 09/522,359  
Reply to Office Action of November 30, 2009

TEC-043504-US

Further, as discussed above all of the claimed elements are not found in Gentile (USPN 3,879,257).

For the above reasons it is submitted that the claims as amended define patentable and allowable subject matter and the rejection of the claims as obvious over Gentile should be withdrawn. An early and favorable action on the merits is requested.

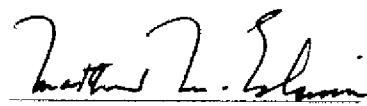
**CONCLUSION**

Based upon the foregoing, Applicants respectfully submit that the independent claims 1, 18, 25, and 44 particularly define and patentably distinguish the present invention over the cited reference. Accordingly, reconsideration of the rejection and allowance of claims 1-3, 6, 8, 18, 20-25, 27, 31, and 33-44 are earnestly requested. However, should the Examiner have any remaining questions and the attending to of which would expedite such action, the Examiner is invited to contact the undersigned at the telephone number listed below.

No extension of time is believed to be required. However, the Commissioner is authorized to charge any fees associated with this or any other communication, or credit any over payment, to Deposit Account No. 09-0525.

Respectfully submitted,

Date: March 1, 2010

By: 

Matthew M. Eslami

Reg. No. 45,488

Patent Agent for Applicant

International Paper Company

6285 Tri-Ridge Boulevard

Loveland, Ohio 45140

Tel: (513) 248-6193

Fax: (513) 248-6455

e-mail: matt.eslami@ipaper.com